

NOTES ON POLYGALACEAE AND SOME NEW SPECIES OF MURALTIA.

By MARGARET R. LEVYNS.

POLYGALA.

Ten species of *Polygala* are recorded from the Cape Peninsula in Bolus and Wolley Dod's list of the flowering plants published in 1904. In the forthcoming flora of the Cape Peninsula this number is reduced to seven, the following species being omitted for the reasons given below. *Polygala virgata* Thunb. does not occur in the area except in cultivation or as an escape from gardens. *Polygala Dodii* Schlechter is merely a pubescent form of *Polygala Garcini* DC and therefore becomes a synonym under the latter species. The writer visited Castle Rock near Miller's Point, the locality in which the type specimen was collected. Here growing under bushes close to the sea were both the normal glabrous and the pubescent forms. In all respects except hairiness there is nothing to distinguish *P. Dodii* from *P. Garcini*. In many South African species of *Polygala* both hairy and glabrous forms occur within the species and if proof were needed that this character has no specific significance, it is provided by specimens of *Polygala Lehmanniana* E & Z preserved in the Guthrie Herbarium of the University of Cape Town. In these both glabrous and hairy shoots may be found on the same plant. *Polygala Zahlbruckneri* Hayek is the third species. The type specimen has not been seen by the writer but from the description (Ann. Hofmus. Wien XV 45 (1900),) it seems almost certain that it too is synonymous with *P. Garcini*. The writer knows the locality from which Penther obtained his type specimen and *P. Garcini* is abundant there.

Two changes of name are necessary in the remaining seven species. *P. ericaefolia* DC does not occur within the area and the plant thus named by Bolus and Wolley Dod appears to be *P. recognita* Chodat. The writer hopes in due course to see Chodat's type specimen but in the meantime is accepting this name for a common species of *Polygala* in the southern part of the Cape Peninsula. The species identified by Bolus and Wolley Dod as *P. macra* DC is not that species. In 1937 Mr. A. W. Exell, at that time a member of the staff of the British Museum, kindly examined a flower from the type specimen sent to him by Professor Hochreutiner. He confirmed the fact that it is certainly not the species growing on the Cape Peninsula and going by that name, *P. Pappeana*

E & Z appears to be the correct name for this species which has a fairly wide range of distribution in marshy places in the western part of the Cape Province. The species contains a number of geographical forms, a study of which is in progress.

The writer is grateful to Mr. Exell for the help he so willingly gave more than ten years ago. He compared some of the local species with specimens in herbaria in Europe thus enabling the writer to come to more definite conclusions than would have been possible had the work been confined to South Africa.

MURALTIA.

Muraltia in many ways is strikingly different from *Polygala*. In the latter genus all the species on the Cape Peninsula are easily distinguished while in the former separation of some of the species is a matter of considerable difficulty. Then too all the species of *Polygala* occurring within the area have a fairly wide distribution in South Africa. In *Muraltia* on the other hand, out of twenty-three species occurring on the Cape Peninsula no fewer than nine are local endemics, an unusually high proportion. The writer is at present engaged on a detailed study of this interesting and puzzling genus and feels somewhat diffident about publishing anything at this stage. However, there are species which must be described and named before the publication of the Flora of the Cape Peninsula which is now ready to be placed in the printer's hands. These species are described below. The first three in all probability have not been described hitherto. The remaining three, however, may well be species already named but so much confusion or uncertainty is attached to the names which are at present in use that it is thought better to give them new names as a temporary measure. *Muraltia Salteri*, described below may prove to be the same as *Muraltia satureoides* DC, a name at present applied in herbaria to a number of distinct species. The plant to which the name *Muraltia neglecta* is now being given is usually termed *Muraltia stipulacea* DC. This species is based on *Polygala stipulacea* L. (Mant. II 260), a species said to be the same as *Heisteria mitior* Berg, (Pl. Cap. 187). The writer has shown (Journ. S. Af. Bot. V 38, 1939), that *Heisteria mitior* Berg is unmistakeably the same as *Muraltia mixta* (L.f.) DC. The two figures cited by Linnaeus for *Polygala stipulacea* (Commel. Hort. II p. 193, t. 97 and Seb. Mus. II p. 63, t. 62, fig. 8) are quite clearly not the present species. Another possible name for the species is *Muraltia linophylla* DC., but Harvey regarded this as synonymous with *Muraltia filiformis* (Thunb.) DC and once more the element of doubt creeps in. The third species to which a new name, *Muraltia inconstans*, is being given is the species known at present as *Muraltia thymifolia* DC.

Thunberg who founded the species stated (Fl. Cap. p. 557) that *Polygala thymifolia* was the same as *Heisteria mitior* Berg. The species under discussion is different in many respects from that of Bergius.

When the writer has completed her study of Muraltia in South Africa she hopes to visit European herbaria when it may be possible to settle many of these problems. In the meantime new names, which in the end may prove to be superfluous, are being assigned so as to avoid further confusion.

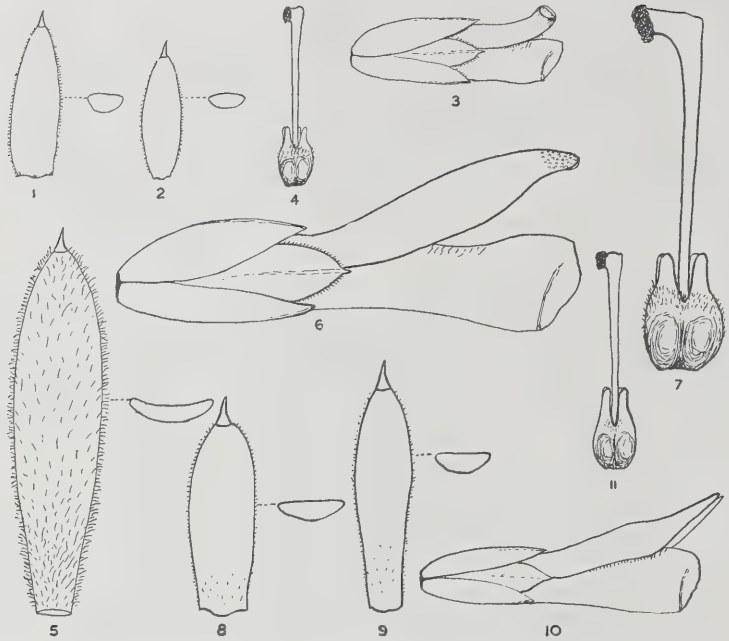
In Muraltia the leaves are often tufted. The leaves on the main stems (primary leaves) may be different in form and size from those on the short shoots in the axils of the primary leaves. The leaves of the axillary tuft are termed secondary leaves. Most species bear a profusion of small, sessile flowers among the leaves of the short shoots. Sometimes the whole plant is floriferous and no part of the plant can be described as purely vegetative. In other cases, and this is always true of very young plants, a few of the basal leaves never bear flowers in their axils. The primary leaves on these parts may be very much longer than usual and have a slightly different shape. All the descriptions given below apply to leaves in the flower-bearing part of the plant. All lengths of flowers quoted below are measured from the base of the calyx to the apex of the longest petal, excluding the crest on the keel.

Drawings. All leaves have a magnification of 5 diameters. All parts of the flower have a magnification of 10 diameters. In all cases the lower surface of the leaf is depicted. Flowers are drawn in side view with the crest removed.

1. **Muraltia curvipetala** Levyns (Figs. 1—4).

Suffrutex. *Folia* fasciculata, sessilia: primaria 4—5 mm. longa, subulata, cuspidata, supra plana, infra rotundata. *Corolla* (sine crista) circa 3 mm. longa. *Petala* lateralia oblonga, ciliata, reflexa, carinae in longitudine aequantia. *Stigma* sessile, laterale.

An erect undershrub, about 40 cm. high. Stems hirsute. Leaves densely tufted: primary leaves 4—5 mm. long, subulate, flat above, rounded below, widest near the base, spine-tipped, shortly ciliate: secondary leaves similar to the primary but usually somewhat concave above, narrowed slightly at the base. Flowers 3 mm. long, pink. Sepals a little more than half the length of the side petals, cuspidate, ciliate. Side petals about as long as the keel, oblong, ciliate except at the apex, the tips curving abruptly upwards and outwards. Stigma lateral, almost sessile on the slightly widened tip of the style. Fruit about as broad as long, the slender horns a little shorter than the rest of the fruit, the surface rough but not hairy: seed glabrous or nearly so.



FIGS. 1—11. *M. curvipetala*. 1. Primary leaf and outline of transverse section. 2. Secondary leaf and outline of transverse section. 3. Flower. 4. Gynoecium.
M. rosmarinifolia. 5. Primary leaf and outline of transverse section. 6. Flower. 7. Gynoecium.
M. Pageae. 8. Primary leaf and outline of transverse section. 9. Secondary leaf and outline of transverse section. 10. Flower. 11. Gynoecium.

Hab. Cape Province. Cape Division. Mountains from Kalk Bay to Muizenberg Reservoir at an altitude of about 1,000 ft.: Kalk Bay, *Levyns* 4151, (type in the Bolus Herbarium).

2. ***Muraltia rosmarinifolia*** Levyns (Figs. 5—7).

Suffrutex. *Folia* solitaria vel fasciculata, sessilia: primaria 8—15 mm. longa, linearia vel lanceolata, plana, cuspidata, supra canaliculata, infra villosa, ciliata. *Corolla* (sine crista) circa 7 mm. longa. *Petala* lateraliter obtusa, apicem versus angustata, apice verrucosa, carinae in longitudine aequantia. *Stigma* patens, subarcuatum, obliquum.

A decumbent undershrub, young shoots sometimes erect. Stems villous. Leaves solitary or with axillary tufts: primary leaves from 8 to 15 mm. long, linear or lanceolate, flat, somewhat channelled above,

spine-tipped, glabrous or almost so above, villous below, long ciliate : secondary leaves similar but shorter than the primary. Flowers about 7 mm. long, pink. Sepals about half as long as the keel, the inner cuspidate, ciliate, the outer obtuse or slightly mucronate, entirely glabrous. Side petals about as long as the keel, tapering towards the apex, obtuse, the tip verrucose outside. Style widening gradually, curved near the apex, the stigma oblique. Fruit with slender horns about as long as the hirsute, seed-bearing part. Seed globose, sparsely hispid.

Hab. Cape Province. Cape Division. West coast of the Cape Peninsula from Olifantsbosch to Platboom. Olifantsbosch, *Salter* 2843 (type in the Bolus Herbarium).

3. **Murrillia Pageae** Levyns (Figs. 8—11).

Suffrutex. *Folia* fasciculata, sessilia : primaria 5—6 mm. longa, oblongo-lanceolata, cuspidata, ciliata, supra plana vel paulum convexa, infra rotundata. *Corolla* (sine crista) circa 4 mm. longa. *Petala* lateralia apicem versus angustata, apice acutissima, carinae in longitudine paulum longiora. *Stigma* fere sessile, laterale.

An erect undershrub, 30 cm. high or less. Stems hispid. Leaves densely tufted : primary leaves 5—6 mm. long, oblong-lanceolate, flat or slightly concave above, rounded below, cuspidate, ciliate, wide at the base : secondary leaves as long as or a little longer than the primary, narrower, flat above, tapering somewhat to the base. Flowers about 4 mm. long, pink. Sepals mucronate, sparsely ciliate, the longest less than half as long as the side petals. Side petals linear, tapering to a fine acute point, a little longer than the keel. Style widening gradually, the stigma lateral on a very short arm. Fruit glabrous or nearly so, with slender horns, somewhat longer than the seed-bearing part. Seed globose, glabrous.

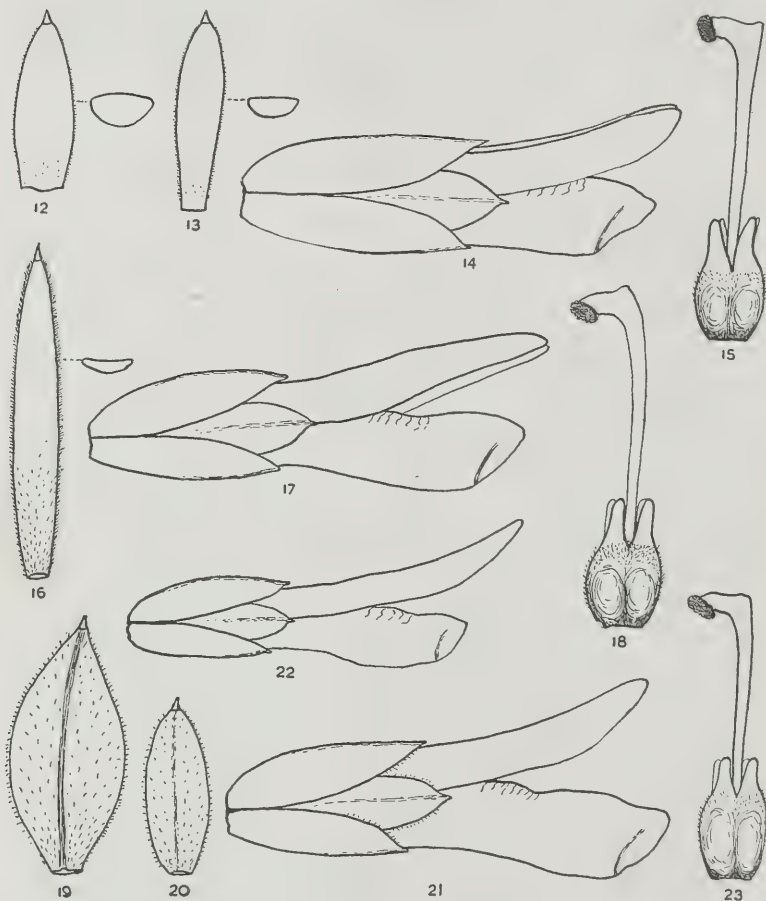
Hab. Cape Province. Cape Division. On sandy ground from Fish Hoek southwards. Between Smitswinkel and Buffels Bays, *Levyns* 6020 (Type in the Bolus Herbarium).

4. **Murrillia Salteri** Levyns (Figs. 12—15).

Suffrutex. *Folia* fasciculata, sessilia : primaria 7—10 mm. longa, subulata, cuspidata, supra plana vel paulum convexa, infra rotundata, breve ciliata. *Corolla* (sine crista) 6—7 mm. longa. *Petala* lateralia, obtusa, apicem versus angustata, carinae in longitudine aequantia. *Stigma* patens, subarcuatum, obliquum.

An erect or decumbent undershrub, 40 cm. high or less. Stems pubescent. Leaves densely tufted, spreading or recurved, sessile : primary leaves 7—10 mm. long, subulate, flat or convex above, rounded

below, wide at the base, tapering to a spine-like point, shortly ciliate with a few rough hairs elsewhere : secondary leaves similar to the primary but not as wide, narrowing slightly towards the base. Flowers 6—7 mm.



FIGS. 12—23. *M. Salteri*. 12. Primary leaf and outline of transverse section. 13. Secondary leaf and outline of transverse section. 14. Flower. 15. Gynoecium.
M. neglecta. 16. Young primary leaf and outline of transverse section. 17. Flower. 18. Gynoecium.
M. inconstans. 19. Primary leaf from the type specimen. 20. Primary leaf from a small tufted plant, *Levy* 8317. 21. Flower (Type). 22. Flower from *Levy* 8317. 23. Gynoecium.

ong, pink. Sepals glabrous, cuspidate, about half as long as the side petals. Side petals about as long as the keel. Style widening gradually, curved near the apex, bearing an oblique stigma. Fruit broad, the slender horns about as long as the rest of the fruit, with a few hairs on the top between the horns and along the line of dehiscence : seed globose, sparsely hispid.

Hab. Cape Province : Cape Division : the lower slopes of Karbonkelberg, Hout Bay, *Levyms* 8954 (type in the Bolus Herbarium) : Fish Hoek, *Levyms* 7076 : between Smith's Farm and Vasco da Gama Peak, *Salter* 5766 and 8446. Caledon Division : Palmiet River Mouth, *Levyms* 7787 : Wortel Gat, near Hermanus, *Levyms* 8635. Bredasdorp Division : Agulhas, *Levyms* 8852.

This species appears to be confined to sandy soils containing lime.

5. ***Muraltia neglecta*** *Levyms* (Figs. 16—18).

Suffrutex. *Folia* solitaria vel fasciculata, sessilia : primaria 7—10 mm. longa, linearia, cuspidata, juvenilia ciliata, supra plana, infra paulum rotundata. *Corolla* (sine crista) 4—5 mm. longa. *Petala* lateralia obtusa vel raro acuta, carinae in longitudine aequantia. *Stigma* patens, subarcuatum, obliquum.

An undershrub, 30 cm. high or less, branching chiefly at the base. Stems glabrous or sparsely pubescent. Leaves solitary or scantily tufted : primary leaves 7—10 mm. long, linear, almost flat above, slightly rounded below, cuspidate, widest near the middle, long-ciliate when young, otherwise glabrous : secondary leaves when present similar but shorter. Flowers 4—5 mm. long, pink. Sepals acute, mucronate, sparsely ciliate, the longest about half as long as the side petals. Side petals linear, usually somewhat obtuse but occasionally acute, about as long as the keel. Style widening upwards, the stigma oblique at the tip of a curved arm. Fruit broadly oblong with slender horns about as long as the rest of the fruit, sparsely pubescent on the upper part of the ovary. Seed globose, sparsely hispid.

Hab. Cape Province. Cape Division. The lower slopes of Devils Peak in rhenosterveld, *Levyms* 5858 (type in the Bolus Herbarium).

This species is fairly widely spread in the Cape, Paarl and Malmesbury Divisions.

6. ***Muraltia inconstans*** *Levyms* (Figs. 19—23).

Suffrutex. *Folia* solitaria vel interdum fasciculata, subsessilia : primaria 6—10 mm. longa, plana, ovato-lanceolata vel lanceolata, cuspidata, juvenilia pubescentia, nervo medio subtus prominenti. *Corolla* (sine crista) 6—7 mm. longa. *Petala* lateralia linearia, obtusa vel acuta,

carinam in longitudine breviora, vel longiora vel aequantia. *Stigma* patens, subarcuatum, obliquum.

An erect or decumbent undershrub, 60 cm. high or less. Stems pubescent. Leaves solitary or some with axillary tufts : primary leaves 6—10 mm. long, flat, ovate-lanceolate or lanceolate, cuspidate, pubescent when young, scabrous later, the midrib prominent below : secondary leaves when present similar to the primary but smaller. Flowers 6—7 mm. long, pink or white. Sepals a little less than half as long as the side petals, glabrous, mucronate, the two inner ciliate, the outer sparsely ciliate or without hairs. Side petals longer than, as long as, or shorter than the keel, linear, obtuse or acute. Style slender widening towards the curved apex, the stigma lateral, oblique. Fruit broad with four slender horns, the horns longer than the seed-bearing part, scantily hispid. Seed globose, sparsely hispid.

Hab. Cape Province. Cape Division. Western slopes of the Cape Peninsula from Lions Head to Karbonkelberg : sandy flats near Retreat : slopes above Camps Bay, *Levy's* 8318 (type in the Bolus Herbarium).

This species is very variable even within a restricted area. It may be a stiffly erect bush or it may be low with a tufted habit. At other times it is decumbent. The leaves vary in size and shape. The relative lengths of the keel and side petals, in most species fairly constant, are here variable. In some plants most of the pollen grains are good whereas in others large numbers of bad grains are present. There are no morphological features in plants with a high proportion of bad pollen to suggest hybridity as a cause. When the species grows with *Muraltia Heisteria* hybrids are occasionally found but they are always intermediate in character, have completely sterile anthers and do not set seed. The species is a puzzling one and further study is required.

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